

REMARKS

Claims 1-21 are pending.

I. New Claims

New claims 16-21 have been added recite features removed from original claims 1 and 2. Specifically, new claim 16 recites that the molding is injection molding, originally presented in claim 1. Claims 17-19 recite features originally presented in claim 2. New claims 20 and 21 present features presented in original claims 3 and 7.

II. Claim Objections

Claims 1 and 3 stand objected to for containing words not spelled in American English. In response, claims 1 and 3 have been amended to recite “molding” and “center”, respectively, while “characterized” has been removed. As this particular amendment is merely to correct spelling, the scope of these claims has not been altered.

III. 35 USC § 112

Claims 2, 3, 5-7, 12-15 stand rejected under 35 USC § 112, second paragraph, as being indefinite for allegedly failing to particularly point out and distinctly claim that which is considered the invention.

The Office Action rejects claim 2 for reciting “tightly spaced”. In response, this feature has been removed. Additionally, the specification has been amended to recite that which is clearly shown by Fig. 2d, i.e., “the frame is formed by a plurality of ribs, the plurality of ribs spaced at a distance from each other smaller than the height of the height of each of the plurality of ribs”, and such feature is additionally recited by new claim 17.

The Office Action notes claims 2, 6 and 12-15 recite “and the like”. In response, Applicants have removed this term from the claims. It should be noted that the term “and the like” is merely included to indicate “and equivalents thereof”. Therefore, removal of this term does not alter the scope of these claims.

Claims 3 and 7 stand rejected for their use of “very close” in “very close to the gravity center line”. In response, claims 3 and 7 have been amended to remove this phrase. However, it is respectfully submitted that the presently recited “in the vicinity of the gravity center line” has the same meaning as the originally recited “very close to the gravity center line”. In any event, it is respectfully submitted that this term merely connects the wall section to the frame at or near the gravity center of the frame. As such, any differences in shrinkage is absorbed by the part of the wall section forming the connection, i.e., the resilient section. See the paragraph bridging pages 1 and 2 of the present specification. Thus, it is respectfully submitted that the term “in the vicinity of the gravity center line” is a structural recitation of this functional requirement. Reconsideration is requested.

Finally, the Office Action rejects claim 5 as the term “pivot line” renders the term unclear. As shown in Figs. 2a and 2b, the pivot point is formed by the area of the wall section having a reduced thickness. The reduced thickness area permits the wall section to pivot about this line, hence the “pivot line”. Because claim 1 (from which claim 5 depends), describes the resilient section (4) as part of the wall section (3), it is respectfully presented that the resilient section (4) is the area of reduced thickness, being part of the wall section. In particular, when a part produced in accordance with the present invention is removed from the mold, the wall section will be relatively cold and will not continue to shrink very much. The frame, having a greater thickness, will be hotter and will continue to shrink more than the wall section circumscribed thereby. Due to the resilient sections, the wall section is guided to protrude perpendicularly from the extension of the wall section (shown as downwards in the Figures). The angle between a horizontal plane (as seen in the drawings) and the angled part of the wall section will increase somewhat as the frame shrinks. Reconsideration is requested.

IV. 35 USC § 103

Claims 1-15 stand rejected under 35 USC § 103(a) as being allegedly unpatentable over WO 97/39954 in view of Kozacka et al (U.S. Patent No. 5,950,707) in view of WO 97/16353. The Office Action asserts that WO '954 teaches each feature of the claims, except for "a resilient section between the intermediate wall section and the frame, as well as a wall section being thinner closest to the connection between the frame and the wall section whereby a pivot line is formed", for which purpose Kozacka et al. and WO '353 are apparently cited.

It must be noted that the purpose of the present invention is a process where flat elements, such as the side walls of WO '954, are made, to avoid the problem of warping when being manufactured. However, neither WO '954 nor the other cited references, even recognize warpage as a problem, and certainly neither teaches, nor suggests, a method for avoiding such warpage. As described throughout the present specification, due to the differences in thickness of the frame and the wall section, there will be significant disparities in the degree of shrinkage as a result of cooling. Thus, the present invention provides a resilient section which compensates for this warpage by flexing. As a result, when the frame shrinks more than the wall section, the resilient section permits the frame and wall section to rotate about the pivot line as to maintain the desired shape, despite disparate shrinking.

Thus, it is respectfully presented that none of the cited references, either alone or in combination, teach nor suggest how to limit warping in a manufactured product.

WO '954 is directed to a collapsible container, and even if this reference discloses elements recited by the present claims, it is respectfully presented that the teachings of this reference are not related to avoiding warping by absorbing differences in temperature related shrinkage. It appears that Kozacka et al. teaches one how to build a seal for a heat exchanger in a wall section from different parts assembled together. However, this purpose is disparate from the present invention, i.e., eliminating warping, and as such, neither does this reference suggest such a feature.

Finally, WO '353 relates to an integrated hinge, known in the art as a "living hinge". Such integrated hinges are mostly made of polypropylene known to be able to withstand flexing over extended periods. Applicants respectfully present that even if the living hinge of WO '353 shares features with the presently claimed element, WO '353 does not teach or suggest to provide such a living hinge to avoid warping. Thus, there is no motivation to provide the living hinge of WO '353 together with the seal for a heat exchanger of Kozacka et al. in the collapsible container of WO '954 to avoid warpage in a molded structure. Reconsideration is requested.

V. Conclusion

It is respectfully presented that all of the rejections and objections of the most recent Office Action have been overcome. Therefore, reconsideration and passage of the present application to allowance are respectfully requested.

Respectfully submitted,



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ATTACHMENT I - Marked-Up Specification Paragraph

--Figure 2a-2d show, in cross-section, parts of different embodiments of an element 1 with profiles constituting a frame 2 of the element 1. The element 1 includes a carrying structure, constituted by the frame 2, and an intermediate wall section 3. The wall section 3 is connected to the frame 2 via a resilient section 4. The resilient section 4 is a part of the wall section 3. The frame 2 is constituted by a U-shaped profile (fig. 2b), a number of tightly placed ribs, such that the ribs are arranged at a distance from each other smaller than the height of the ribs (fig. 2d), a closed hollow profile (fig. 2a) or an L-shaped profile (fig. 2c). The wall section 3 is connected to the frame 2 at or very close to the gravity centre line 5 of the frame 2. The frame 2 is constituted by a closed hollow profile (fig. 2a) formed through injection of a pressurised fluid into a still molten thermoplastic material. The material thickness of the wall section 3 is thinner closest to the connection between the frame 2 and the wall section 3 than the average thickness of the wall section 3 and the frame 2, whereby a barrier is formed, in this connection part at the solidification of the thermoplastic material, which barrier, prevents the pressurised fluid from entering the wall section 3 during the manufacturing process. This thinner part will also act as a pivot line (Fig. 2a-2b). The pivot line will facilitate resilient action in the wall section 3.--

ATTACHMENT II - Marked-Up Claims

1. (Amended) Flat or semi-flat element (1) including a partly or completely circumambient frame (2), which element (1) is manufactured through molding [moulding] of a polymeric material, [preferably injection moulding of a thermoplastic material,] wherein [characterised in that] the element (1) includes a carrying structure, constituted by the frame (2), and an intermediate wall section (3), which wall section (3) is connected to the frame (2) via a resilient section (4), the resilient section (4) being a part of the wall section (3), wherein differences in the temperature related shrinkage between the frame (2) and the wall section (3) is absorbed by the resilient section (4) whereby warping of the element (1) is avoided.

2. (Amended) Flat or semi-flat element (1) according to claim 1, wherein [characterised in that] the frame (2) is formed by a U-shaped profile[, a number of tightly placed ribs, a closed hollow profile or the like].

3. (Twice Amended) Flat or semi-flat element (1) according to claim 1, wherein [characterised in that] the wall section (3) is connected to the frame (2) in the vicinity of [at or very close to] the gravity center [centre] line (5) of the frame (2).

4. (Twice Amended) Flat or semi-flat element (1) according claim 1, wherein [characterized in that] the frame (2) is a closed hollow profile formed through injection of a pressurised fluid into a still molten thermoplastic material, that the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a barrier is formed in this connection part at the solidification of the thermoplastic material, which barrier prevents the pressurised fluid from entering the wall section (3) during the manufacturing process.

5. (Twice Amended) Flat or semi-flat element (1) according to claim 1, wherein [characterized in that] the material thickness of the wall section (3) is thinner closest to the

connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a pivot line is formed, which pivot point line facilitates resilient action in the wall section (3).

6. (Twice Amended) Flat or semi-flat element (1) according to claim 1, wherein [characterized in that] the element (1) forms a side wall of a container or a collapsible container, a bottom section of a container or a collapsible container or a lid of a container [or the like].

7. (Amended) Flat or semi-flat element (1) according to claim 2, wherein [characterized in that] the wall section (3) is connected to the frame (2) in the vicinity of [at or very close to] the gravity center line (5) of the frame (2).

8. (Amended) Flat or semi-flat element (1) according to claim 2, wherein [characterized in that] the frame (2) is a closed hollow profile formed through injection of a pressurized fluid into a still molten thermoplastic material, that the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a barrier is formed in this connection part at the solidification of the thermoplastic material, which barrier prevents the pressurized fluid from entering the wall section (3) during the manufacturing process.

9. (Amended) Flat or semi-flat element (1) according to claim 3, wherein [characterized in that] the frame (2) is a closed hollow profile formed through injection of a pressurized fluid into a still molten thermoplastic material, that the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a barrier is formed in this connection part at the solidification of the thermoplastic material, which barrier prevents the pressurized fluid from entering the wall section (3) during the manufacturing process.

10. (Amended) Flat or semi-flat element (1) according to claim 2, wherein [characterized in that] the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a pivot line is formed, which pivot line facilitates resilient action in the wall section (3).

11. (Amended) Flat or semi-flat element (1) according to claim 3, wherein [characterized in that] the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a pivot line is formed, which pivot line facilitates resilient action in the wall section (3).-

12. (Amended) Flat or semi-flat element (1) according to claim 2, wherein [characterized in that] the element (1) forms a side wall of a container or a collapsible container, a bottom section of a container or a collapsible container or a lid of a container [or the like].

13. (Amended) Flat or semi-flat element (1) according to claim 3, wherein [characterized in that] the element (1) forms a side wall of a container or a collapsible container, a bottom section of a container or a collapsible container or a lid of a container [or the like].

14. (Amended) Flat or semi-flat element (1) according to claim 4, wherein [characterized in that] the element (1) forms a side wall of a container or a collapsible container, a bottom section of a container or a collapsible container or a lid of a container [or the like].

15. (Amended) Flat or semi-flat element (1) according to claim 5, wherein [characterized in that] the element (1) forms a side wall of a container or a collapsible container, a bottom section of a container or a collapsible container or a lid of a container [or the like].